

**Before the
FEDERAL COMMUNICATIONS COMMISSION
Washington, D.C. 20554**

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| In the Matter of |) | |
| |) | |
| Amendment of Part 101 of the Commission's |) | WT Docket No. 10-153 |
| Rules to Facilitate the Use of Microwave for |) | |
| Wireless Backhaul and Other Uses and to |) | |
| Provide Additional Flexibility to Broadcast |) | |
| Auxiliary Service and Operational Fixed |) | |
| Microwave Licensees |) | |
| |) | |
| Request for Interpretation of Section |) | WT Docket No. 09-106 |
| 101.141(a)(3) of the Commission's Rules Filed |) | |
| by Alcatel-Lucent, Inc., et al. |) | |
| |) | |
| Petition for Declaratory Ruling Filed by |) | WT Docket No. 07-121 |
| Wireless Strategies, Inc. |) | |
| |) | |
| Request for Temporary Waiver of Section |) | |
| 101.141(a)(3) of the Commission's Rules Filed |) | |
| by Fixed Wireless Communications Coalition |) | |

COMMENTS OF AT&T INC.

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COMMENTS OF AT&T INC.

AT&T Inc., on behalf of itself and its affiliates ("AT&T"), hereby submits comments in response to the Federal Communications Commission's ("FCC" or "Commission") Notice of Proposed Rulemaking and Notice of Inquiry (together, "NPRM") in the above-referenced proceeding.¹ In the NPRM, the Commission seeks comment on five proposals designed to increase the efficient use of spectrum for wireless backhaul. The proposals include: (1) allowing

¹ *In the Matter of Amendment of Part 101 of the Commission's Rules to Facilitate the Use of Microwave for Wireless Backhaul and Other Uses and to Provide Additional Flexibility to Broadcast Auxiliary Service and Operational Fixed Microwave Licensees; Request for Interpretation of Section 101.141(a)(3) of the Commission's Rules Filed by Alcatel-Lucent, Inc., et al.; Petition for Declaratory Ruling Filed by Wireless Strategies, Inc.; Request for Temporary Waiver of Section 101.141(a)(3) of the Commission's Rules Filed by Fixed Wireless Communications Coalition*, Notice of Proposed Rulemaking and Notice of Inquiry, WT Docket No. 10-153, WT Dkt. No. 09-106, WT Dkt. No. 07-121, FCC 10-146 (Aug. 5, 2010) ("NPRM").

Fixed Service (“FS”) operations to share certain spectrum bands currently used by the Broadcast Auxiliary Service (“BAS”) and the Cable TV Relay Service (“CARS”), while also providing broadcasters greater access to Part 101 FS spectrum by eliminating the “final link” rule;² (2) permitting “adaptive modulation”; (3) authorizing “auxiliary” fixed stations; (4) lowering the current efficiency standards in rural areas; and (5) allowing smaller antennas in certain bands. As detailed below, while AT&T applauds the Commission’s decision to tackle wireless backhaul issues in a comprehensive manner—especially given skyrocketing demand for mobile broadband—AT&T is concerned that some proposals raise potential interference concerns that require further examination.

I. EXECUTIVE SUMMARY

The widespread use of mobile broadband has tremendous potential to reshape how the public communicates, seeks entertainment, and conducts business. Recent experience with the meteoric uptake in data demonstrates that with better networks, devices, and software, Americans will eagerly adopt and use mobile broadband technologies. The demand for mobile wireless capacity necessarily results in a commensurate loading of backhaul facilities. Accordingly, the industry—recognizing the dramatic increases that are taking place in data traffic—is aggressively transitioning to backhaul technologies that will accommodate this demand, including both fiber and wireless backhaul solutions. The NPRM sets forth various proposals for more efficient utilization of spectrum to address this skyrocketing demand.

AT&T supports several proposals in the wireless backhaul NPRM, as well as additional changes consistent with the NPRM’s principal policy goal of increasing spectrum efficiency. In particular, AT&T strongly supports the Commission’s high-level goal of increasing spectrum

² The “final link” rule prohibits broadcasters from using FS stations as the final radiofrequency (“RF”) link in the chain of distribution of program material to broadcast stations.

available for FS operations.³ To this end, AT&T proposes that the Commission coordinate with NTIA to permit commercial FS licensees to share the 7125-8500 MHz band with government licensees.⁴ Such public-private sharing has been successful in other bands and can be accomplished without harmful interference to existing government licensees. For its part, the Commission proposes to allow FS licensees to share the 6875-7125 MHz and 12700-13200 MHz bands with existing BAS and CARS licensees. While AT&T commends the intent of this proposal, the existing use and coordination procedures in these bands make it unlikely that such increased flexibility alone would significantly increase future FS wireless backhaul capacity. This spectrum is currently used for mobile service and coordination is done on an informal basis, two factors that limit the possibility of extensive backhaul deployment in these bands.

While the Commission should allocate additional spectrum for wireless backhaul, it should also modify its rules to increase the efficiency of existing wireless backhaul bands. For example, the Commission should impose certain conditions on FSS earth stations in bands shared on a co-primary basis with FS operations. Currently, the 5925-6425 MHz band (“Lower 6 GHz band”) is shared on a co-primary basis with fixed satellite earth station uplinks.⁵ In practice, however, satellite earth station operators receive preferential access to that shared spectrum because they are coordinated on a full arc, full band basis. AT&T’s recommendation, consistent with a prior Fixed Wireless Communications Coalition (“FWCC”) proposal, will maximize the efficient use of the radio spectrum for both satellite and point-to-point terrestrial fixed operations.

³ NPRM, ¶ 11.

⁴ This was initially proposed by the Fixed Wireless Communications Coalition (“FWCC”) in March 2010. Comments of FWCC, RM-11605 (filed Mar. 16, 2010) (“FWCC Comments”).

⁵ 47 C.F.R. § 25.202(a)(1).

Some proposals in the NPRM designed to increase flexibility show promise, but require further study. For example, AT&T supports the Commission’s “adaptive modulation” proposal, which could enhance efficiency and boost the reliability of fixed wireless traffic. But AT&T also urges caution. Before the Commission permits the use of adaptive modulation, it should set baseline standards and require that licensees identify their intent to use adaptive modulation in their coordination notices. In this same vein, the Commission must fully vet the benefits and drawbacks of the NPRM’s proposals to lower the efficiency standards in rural areas and permit smaller antennas. At this time, these proposals are too premature to adopt. In such regards, AT&T also opposes the “auxiliary” station proposal. This proposal—which derives from Wireless Strategies, Inc.’s proprietary “smart antenna” product—would produce harmful interference in the fixed wireless bands, particularly in the vital and heavily-utilized 6 GHz and 11 GHz bands, while offering no offsetting public benefits.

II. THE COMMISSION SHOULD TAKE STEPS TO INCREASE AND ALLOW MORE EFFICIENT UTILIZATION OF WIRELESS BACKHAUL SPECTRUM FOR NEXT-GENERATION MOBILE BROADBAND.

Consumer demand for wireless broadband services is increasing at an astounding pace. For example, over just the last three years, data traffic on AT&T’s mobile network is up almost 5,000 percent—a compound annual growth rate of 268 percent.⁶ Other providers have likewise experienced dramatic increases in utilization of wireless data services. This explosive growth in wireless broadband usage is driving a corresponding increase in demand for wireless backhaul services. Historically, backhaul for wireless services was provisioned over wireline T1 facilities. However, mobile broadband services have begun to require vastly greater backhaul transmission capacity and speeds than such copper links can provide and, as mobile coverage has expanded,

⁶ Federal Communications Commission, National Broadband Plan, p. 76 (March 2010).

have reached areas where copper facilities do not reach. As one panelist in last year's Broadband Workshop put it, "T1s are out. . . . it's either going to be fiber or it's going to be microwave."⁷ There is simply no way that copper T1s can support the huge increases in wireless traffic that are already under way.

The indelible conclusion is that much of the existing backhaul infrastructure will need to be replaced in order to meet the insatiable demand for bandwidth of next generation broadband technologies and services, and providers of all stripes are building new backhaul facilities.⁸ High capacity wireline facilities will play a role in meeting this demand, but so too will fixed wireless services. Clearwire is using microwave backhaul for 90 percent of its cell sites,⁹ while United States Cellular ("USSC") reported last year that it already has microwave backhaul facilities at approximately 40 percent of its cell sites.¹⁰ Indeed, numerous panelists at last year's

⁷ David Armentrout, President and COO, Fibernet, Remarks at FCC National Broadband Plan Workshop, Deployment/Wired - General Transcript, at 45 (Aug. 12, 2009), http://www.broadband.gov/docs/ws_02_deploy_wired_transcript.pdf.

⁸ Virtually all wireless carriers are mounting major campaigns to upgrade backhaul facilities to fiber. *See* Neville Ray, Senior Vice President Engineering, T-Mobile USA, Remarks at the FCC National Broadband Workshop, Deployment/Wireless – General, at 69 (Aug. 12, 2009), *available at* http://www.broadband.gov/docs/ws_03_deploy_wireless_transcript.pdf ("the T-Mobile plan is to get fiber to everything we can because we think that future-proofs the network and moves us into a cost structure very early on which enables us to grow our customer base"); *see id.* at 47 (Jake Macleod, Principal Vice President and Chief Technology Officer, Bechtel Telecom) ("the ultimate solution is fiber to the cell site. If you look at some of the foreign countries we deal with a lot, they're north of 90 percent fiber to the cell sites"); Yankee Group 4G Network Backhaul Summit, Powerpoint Presentation of CFN Services, at 4 (Sept. 15, 2009) ("ILECs and MSOs are aggressively building out the fiber infrastructure; Verizon (ILEC) will have fiber to 80%+ of all sites in region by 2012; AT&T (ILEC) has fiber deployed or planned to most high capacity sites; . . . CLECs, Utilities, and other Alternative Access Vendors, More limited fiber footprint than incumbents but better economics").

⁹ Yankee Group 4G Network Backhaul Summit, Powerpoint Presentation of John Saw, CTO, Clearwire (Sept. 15, 2009).

¹⁰ Comments of United States Cellular, WT Dkt. No. 09-106 (filed July 27, 2009).

FCC broadband workshops identified microwave as an increasingly important backhaul option, particularly in less densely populated areas. This testimony should come as no surprise as microwave is the dominant form of backhaul in Latin America, Europe, the Middle East, and much of Asia.¹¹ The Commission should therefore be commended for initiating this proceeding to ensure that sufficient spectrum is available for this increasingly important backhaul medium.

III. AT&T SUPPORTS THE COMMISSION’S PROPOSAL TO ALLOCATE ADDITIONAL SPECTRUM BELOW 10 GHZ TO MEET THE ANTICIPATED BACKHAUL DEMANDS OF NEXT GENERATION WIRELESS BROADBAND.

The FCC should set aside additional spectrum below 10 GHz for point-to-point services now to ensure that backhaul does not become a limiting factor in the delivery of mobile broadband services in the future. As noted above, together with fiber, wireless point-to-point FS will continue to be a primary source of backhaul for mobile broadband. While spectrum bands above 10 GHz (such as 11 GHz, 18 GHz, Local Multipoint Distribution Service, and 38.6-40 GHz) are available and well suited for high capacity backhaul over relatively short paths in urban and suburban settings, for longer backhaul paths—more common in rural and some suburban settings—frequencies below 10 GHz are especially critical for wireless backhaul. These lower frequencies allow for greater propagation and long path lengths while using reasonable antenna designs. Above 10 GHz, rain fading increases significantly, potentially disrupting critical communications. And, because spectrum above 10 GHz only supports short to medium path lengths, providing wireless backhaul over long paths at frequencies above 10 GHz requires the construction and maintenance of additional towers, which significantly raises costs and deters deployment.

¹¹ Yankee Group 4G Network Backhaul Summit, Powerpoint Presentation of Rajesh Chundry, Ericsson, at Slide 4 (Sept. 15, 2009).

A. The Commission Should Work with NTIA to Permit FS Licensees to Share the 7125-8500 MHz Band with Existing Government Licensees.

The Commission should continue its efforts to allocate spectrum below 10 GHz for wireless backhaul. To this end, the Commission should coordinate with NTIA to permit commercial FS licensees to share the 7125-8500 MHz band with existing government licensees.¹² Such public-private sharing has been successful in other bands and can be accomplished here without harmful interference.¹³ In particular, the Commission could model public/private sharing of the 7125-8500 MHz band after the sharing framework used in the 23 GHz band by federal and non-federal users.¹⁴ In the 23 GHz band, the spectrum has been allocated for both private FS licensees and government users. To facilitate sharing, the FCC and NTIA have struck an effective balance where NTIA permits conditional authorization of fixed microwave links by FS users, but only on specified channel pairs.¹⁵ This conditional authorization allows applicants for fixed microwave links to begin operating a link once an application is filed and the link has been frequency coordinated; this greatly enhances the utility of the band. Before NTIA permitted conditional authorization, parties desiring to use the 23 GHz were not permitted to operate fixed microwave links until the Commission and the Federal

¹² See FWCC Comments.

¹³ Notably, NTIA has completed the standard channel plan for this band, and public safety users must now adhere to the channel size limitations. This standardization would help ease any coordination concerns that would arise from sharing this spectrum for wireless backhaul.

¹⁴ See 47 C.F.R. §2.105 (United States Table of Frequency Allocations).

¹⁵ *Amendment of Part 101 of the Commission's Rules to Accommodate 30 Megahertz Channels in the 6525-6875 MHz Band; Amendment of Part 101 of the Commission's Rules to Provide for Conditional Authorization on Additional Channels in the 21.8-22.0 GHz and 23.0-23.2 GHz Band*, Report and Order, 25 FCC Rcd 7760 (2010).

government—through the Intergovernmental Radio Advisory Committee process—approved use of the spectrum. That process was sufficiently long that it deterred many users.

In this case, the Commission should urge NTIA to consider allowing FS licensees to share the 7125-8500 MHz band with government users. As part of this agreement, the Commission should also request that NTIA permit the use of conditional authorizations for certain channel pairs in the band. By allowing applicants to operate under conditional authority in the 7125-8500 MHz band, the Commission will take an important step in ensuring the continued availability of spectrum for wireless backhaul and critical services such as public safety and utilities communications.

B. The Proposal in the NPRM to Allow Fixed Service Operations in the 6875-7125 MHz and 12700-13200 MHz Bands Will Not Noticeably Increase Usable Spectrum for Wireless Backhaul.

As noted above, AT&T agrees with the Commission that “it is vital to allow existing bands to be used for backhaul.”¹⁶ Unfortunately, the NPRM’s proposal to allow FS licensees to share the 6875-7125 MHz and 12700-13200 MHz bands with existing BAS and CARS licensees is unlikely to result in any significant expanded use of these bands for long haul wireless microwave services. As the Commission explains, the television and radio stations licensees in these bands rely on this spectrum to transmit program material from the site of a breaking news story or a major event to the studio for inclusion in a broadcast program.¹⁷ Because news can happen anywhere, this spectrum includes a large number of Television Pick Up licensees, which are generally permitted to operate across the entire band and over broad geographic areas. Because there are generally a discrete number of television broadcasters in any given market

¹⁶ NPRM, ¶ 11.

¹⁷ *Id.* ¶ 12.

using mobile TV Pick Ups, the coordination process among licensees is informal and rapid, often conducted through the auspices of the local branch of the Society of Broadcast Engineers.¹⁸ While existing BAS licensees have been able to operate effectively under these informal conditions,¹⁹ the introduction of a large number of FS links in these bands does not appear feasible; either the links would be subjected to regular interference from mobile pick ups, or the existing mobile pick up use of the band would be severely constrained. Given this, AT&T does not anticipate that significant FS deployment in these bands would likely occur even if the proposed rules were adopted.²⁰

The parallel to allowing FS use of BAS frequencies is the elimination of the “final link” rule to allow broadcasters access to existing FS bands. While AT&T is not opposed to providing access to FS resources for legitimate uses, the influx of significant numbers of broadcast fixed uses into the existing FS bands could actually decrease the spectrum available for wireless backhaul. Again, while AT&T does not object to the use of FS resources for appropriate purposes, AT&T does believe that such use should be compatible with existing FS restrictions—no mobile pick up use should be authorized and video users should be required to meet the same technical requirements (including minimum path length rules) as existing FS users. Regardless of the impact of such sharing, it should be clear that the NPRM’s existing proposals are unlikely to result in any significant use of BAS bands for long haul FS deployments. Accordingly, the

¹⁸ See, e.g., 47 C.F.R. § 74.638(a) (oral coordination with less than 30 days’ notice).

¹⁹ Informality is possible because the broadcast industry is typically a well known, and relatively small, universe of users in any given metropolitan region. This model of informal coordination would be very difficult to undertake if the number of FS users in a metropolitan area were substantially increased.

²⁰ If the Commission does adopt its proposed rules, it should segment the 11 GHz spectrum into distinct pieces for FS users and broadcasters.

proposals would not materially advance the objective of making additional spectrum below 10 GHz available for wireless backhaul.

IV. AT&T SUPPORTS THE COMMISSION’S ADAPTIVE MODULATION PROPOSAL.

The Commission should amend its rules to provide that the “minimum payload capacity requirements must be met at all times, except during anomalous signal fading, when lower capacities may be utilized in order to maintain communications.”²¹ As the Commission explains, fixed service links are subject to atmospheric “fading”—a temporary drop in received power—that leads to an increase in bit errors and sometimes a complete loss of communications capabilities.²² Although most fixed service links incorporate reserve power, known as a “fade margin,” to mitigate the effects of atmospheric fading, a link may still be lost when a fade occurs in excess of the fade margin. The Commission proposes to allow data rates on point-to-point links to drop temporarily below the minimum payload capacity specified in the rule, which provides an additional margin allowing the link to function at an impaired state rather than dropping entirely. This reduction in data rate requires a temporary change in the type of modulation, a process known as “adaptive modulation.” As detailed below, adaptive modulation will create several immediate benefits for fixed microwave systems and the users who rely on them.

Most importantly, allowing use of adaptive modulation would increase operational efficiency and flexibility while promoting reliability and reducing system outages.²³

²¹ Specifically, the Commission proposes to allow licensees to temporarily drop below minimum payload capacity requirements specified by the rules in certain limited circumstances. NPRM, ¶ 39.

²² *Id.* ¶ 30.

²³ The Commission explains that “[a]llowing carriers to operate below the current efficiency standards for short periods when it is necessary to maintain an operational link,

Recognizing that the requirements imposed by Section 101.141(a)(3) provide an important safeguard—ensuring that important wireless spectrum is being used as efficiently as possible²⁴—adaptive modulation must be introduced in a manner that increases flexibility without simply allowing poorer engineering of link budgets. For example, AT&T believes adaptive modulation can enhance efficiency by allowing for the continued transport of critical network timing information in situations where a link would otherwise be inoperable. In certain cases, the loss of a link necessitates a “reboot” of the facilities to re-establish communications, a process that can take 20 minutes or more. By allowing the link to remain in service—even if no significant data traffic is being transmitted—a temporary atmospheric fade might result in an effective outage of seconds or minutes, rather than hours. This is especially critical in cases of traffic related to public safety—such as the provision of 911 service—and homeland security, where the intermittent signal interruption caused by atmospheric fading would otherwise impair or result in the loss of these vital communications.²⁵ Although the use of adaptive modulation may reduce the link capacity below the rule’s specifications for a short time, it represents an improvement over a complete loss of communications, which would currently be experienced in this situation.

without a need for waiver, could enable carriers to . . . enhance reliability of microwave links.” *Id.* ¶ 36.

²⁴ The Commission has previously stated that the underlying purpose of Section 101.141(a)(3) is to promote efficient frequency use. *Minnesota Power Inc. Request for Waiver of Sections 101.141(a)(3) and 101.147 of the Commission’s Rules for Microwave Industrial/Business Pool Station WEG480, Salol, Minnesota*, Order, 18 FCC Rcd 11374, ¶ 6 (2003).

²⁵ The Commission explains that “[a]daptive modulation can allow communications to be maintained during adverse propagation conditions. Given the critical backhaul and public safety applications of FS stations, we find this benefit to be significant.” NPRM, ¶ 37.

Adaptive modulation can also provide benefits beyond the enhanced ability to negotiate intermittent fading. First, adaptive modulation would benefit users in underserved rural areas.²⁶ In rural areas, microwave systems are more likely than in urban areas to have long path lengths. As a result, fixed links in rural areas are more likely to face difficulties with signal fades. The use of adaptive modulation would improve availability and reduce interruptions to data and voice communications service in these areas. Second, by increasing the reliability of fixed microwave systems, adaptive modulation will make these systems more attractive for the provision of wireless backhaul services. Ultimately, this should enhance the use of wireless in areas where wireline backhaul is not available or would be costly to construct.

Other countries already have recognized these benefits and therefore permit adaptive modulation. Adaptive modulation is approved in Canada²⁷ and by ETSI, the standards development body for the European Union.²⁸ Indeed, ETSI has noted that the use of adaptive

²⁶ The Commission recognizes that these “proposed rule changes have the potential to reduce operational costs and increase reliability, which could be particularly important in facilitating the use of wireless backhaul in rural areas.” *Id.* ¶ 28.

²⁷ See Letter from Michael Christensen, Manager, Fixed Wireless Communications, Spectrum Engineering Branch, Industry Canada to Scott Duffas, Alcatel-Lucent, Industry Canada File No. 159790 (undated) (“I can confirm that such systems are eligible for licensing by Industry Canada, even though their spectral efficiency may occasionally fall below the minimum level specified in the relevant Standard Radio System Plan (SRSP). Such systems must comply with the minimum spectral efficiency during normal operation. Operation below this level of spectral efficiency should only take place a small portion of the time, for example during adverse propagation conditions.”).

²⁸ *Fixed Radio Systems; Characteristics and requirements for point-to-point equipment and antennas; Part 2-2: Digital systems operating in frequency bands where frequency co-ordination is applied; Harmonized EN covering the essential requirements of Article 3.2 of the R&TTE Directive*, Harmonized European Standard (Telecommunications Series), Final draft ETSI EN 302 217-2-2 V1.3.1, § 1.3.1 (December 2008).

modulation can “offer more efficient operative conditions” than systems not employing adaptive modulation.²⁹ The Commission should follow suit.

In such regards, AT&T supports the Commission’s proposal³⁰ to require licensees that wish to use adaptive modulation to “state that fact in their prior coordination notices.”³¹ This proposal leverages the Commission’s existing licensing framework to ensure that licensees properly use adaptive modulation to support the Commission’s goals of spectrum efficiency and continuity of communications. Specifically, Section 101.103 of the rules requires that fixed microwave licensees engage in frequency coordination prior to the filing of any new or major modification applications.³² AT&T proposes that the Commission employ this process to monitor adaptive modulation by requiring applicants to identify the potential use of adaptive modulation in the prior coordination notices they provide to other affected licensees. Such notification would also permit the Commission to require licensees using adaptive modulation to upgrade their facilities if the use of adaptive modulation was precluding other conforming uses of the band in any given instance.

²⁹ *Id.*

³⁰ The Commission notes that this proposal is based on an earlier proposal from AT&T in the adaptive modulation docket. *See* NPRM, ¶ 39.

³¹ The Commission has previously taken similar action in its treatment of Automatic Transmit Power Control (“ATPC”). ATPC is another method used by licensees to mitigate signal fades and/or communications loss, as it allows for the temporary automatic adjustment of transmitter output power when path fading is detected. Interference Criteria for Microwave Systems, Telecommunications Industry Association Telecommunications Systems Bulletin TIA10-F § 4.3.1 (June 1, 2009).

³² 47 C.F.R. § 101.103.

V. THE COMMISSION SHOULD MODIFY THE PRACTICE OF ROUTINE FULL-BAND, FULL-ARC LICENSING FOR FCC EARTH STATIONS.

AT&T also believes that the availability of wireless backhaul could be enhanced through other rule modifications. Although not directly addressed in the NPRM, AT&T urges the Commission to revise its coordination procedures for Fixed Satellite Service (“FSS”) earth stations in bands shared on a co-primary basis with FS operations. These changes, discussed below, would achieve in practice the co-equal sharing specified in Parts 25 and 101 of the Commission’s rules.

Currently, the Lower 6 GHz band is shared on a co-primary basis with fixed FSS uplinks.³³ In practice, however, sharing has not occurred on an equitable basis and satellite earth station operators appear to receive preferential access to shared spectrum. Specifically, the Commission licenses earth stations for the entire allocated band with no loading requirements, while point-to-point terrestrial operations are limited to frequencies actually needed and are subject to stringent spectrum efficiency requirements. Further, because the Commission licenses earth stations for the full 360° azimuth range, earth stations effectively preclude coordination requests from terrestrial stations even in directions in which the earth station is not currently operating.³⁴ Given this “full band, full arc” preclusion, the band has been impacted in and near major population centers where the demand for backhaul and other fixed service communications is greatest.

³³ 47 C.F.R. § 25.202(a)(1).

³⁴ See *Communications Satellite Corp.*, Memorandum Opinion, Order and Authorization, 8 F.C.C. 2d 1001, 1003 (1967) (consistent practice in the United States to “coordinate[] the entire bands 5925-6425 MHz (transmit) and 3700-4200 MHz (receive) and all azimuths from 0 degree-360 degrees and all elevation angles from 5 degrees and above, in order to allow for flexibility of operation.”) Although in 1967 this opinion found “little or no adverse affect upon terrestrial systems in the areas concerned,” *id.*, that is no longer true today.

AT&T proposes—consistent with the FWCC Petition in 1999—that the Commission require an FSS operator to demonstrate “actual need” for the spectrum requested at the time of licensing. Specifically, where an FSS earth station is using spectrum that is shared with point-to-point terrestrial services, the Commission should change its policy from authorizing an FSS earth station to use the entire frequency band to requiring it to use no more than twice the amount of spectrum for which it is able to demonstrate an “actual need.” Further, FSS earth stations should be required to accept interference from a new terrestrial facility on the same basis as the FSS earth station accepted interference in previous coordinations. Together, these proposals will maximize the efficient use of the radio spectrum for both satellite and point-to-point terrestrial fixed operations.

AT&T notes that the Commission, in a 2002 Order, discussed the FWCC petition, but found that the “record [was] not sufficiently developed to permit [the FCC] to issue rules.”³⁵ Specifically, the Commission found that “the record lacks necessary information on how to achieve more equitable sharing of the spectrum.”³⁶ AT&T accordingly urges the Commission to solicit comment on the FWCC petition and develop a record that would permit the adoption of modified FSS coordination rules.

VI. THE COMMISSION MUST PROCEED WITH CAUTION BEFORE LOWERING THE EFFICIENCY STANDARDS IN RURAL AREAS OR ALLOWING FIXED SERVICE LICENSEES TO USE SMALLER ANTENNAS IN ADDITIONAL SPECTRUM BANDS.

As reflected throughout these comments, AT&T supports increasing flexibility as a vehicle to promoting the efficient use of FS spectrum. Nevertheless, AT&T is concerned about the NOI’s proposals to lower efficiency standards in rural areas and permit smaller antennas.

³⁵ *FWCC Request for Declaratory Ruling on Partial-Band Licensing of Earth Stations in the Fixed-Satellite Service*, Second Report and Order, 17 FCC Rcd 2002, ¶ 10 (2002).

³⁶ *Id.* ¶ 11.

Under current FCC rules, rural providers must maintain the same capacity requirements also maintained by carriers in more densely populated metropolitan areas. The NOI asks if the lower traffic volume on rural networks and the greater distances between microwave links makes maintenance of these minimum capacity requirements financially prohibitive in some instances. Accordingly, the NOI asks if lowering the current efficiency standards in rural areas could reduce the costs associated with wireless backhaul. Separately, the NOI asks if the FCC should allow FS licensees to use smaller antennas, which are currently permitted in the 11 GHz band.

Both of these NOI proposals pose potentially serious concerns and incentivize a less-efficient use of spectrum. Accordingly, AT&T does not support their adoption at this time. To the extent that compelling circumstances are identified, AT&T supports the current waiver approach, which has proven relatively successful at balancing the competing interests of efficiency and rural service. Nevertheless, if either proposal is seriously considered, the Commission should proceed in a rational, thoughtful manner. AT&T suggests, for example, that a trial be conducted in a single band—other than the densely used 6 GHz or 11 GHz bands. If the trial proves successful, then the Commission could consider lowering the efficiency standards and antenna height restrictions in other bands. In no event, however, should the Commission lower the efficiency standards for the 6 GHz and 11 GHz bands, or any future allocations below 10 GHz. Nor should the Commission permit the use of smaller antennas at 6 GHz. As detailed above, this spectrum will be densely used for long haul communications in support of broadband mobile operations, and efficiency reductions would result in under-utilization and reduced capacity in this important band, even as demand for long path, high capacity backhaul increases. Such a result would be diametrically opposed to the Commission's objective in this proceeding—increasing the efficient use of spectrum for wireless backhaul.

Indeed, should the Commission consider these measures in any band, authorizations should be granted on a secondary basis to operations that meet all applicable efficiency standards.

VII. THE COMMISSION SHOULD REJECT THE AUXILIARY STATION CONCEPT PROPOSED BY WSI.

Over three years ago, WSI filed a petition asking the Commission to “confirm[] that a Fixed Service licensee is permitted to simultaneously coordinate multiple links whose transmitter elements collectively comply with the Commission’s antenna standards and frequency coordination procedures.”³⁷ WSI claimed that its proffered “interpretation” of the Commission’s Rules would enhance spectrum efficiency by allowing a licensee to reuse the licensed spectrum in a given area. As AT&T and others observed, however, WSI’s proposed licensing system clearly was inconsistent with the Commission’s rules and sound public policy, and the Commission should be applauded for its decision to reject WSI’s Petition.

Although WSI characterizes its current proposal as different, the proposal in the NPRM remains problematic for many of the same reasons that WSI’s prior proposal was rejected.³⁸

³⁷ Request for Declaratory Ruling, Wireless Strategies, Inc., WT Dkt. No. 07-121, at 1 (filed Feb. 27, 2007) (“WSI Petition”). WSI describes itself as a “carrier’s carrier” whose “mission is to engineer, provision, operate, lease and/or sell Concurrently Coordinated licensed microwave networks in every city and town across the United States.” See <http://www.wirelessstrategies.net> (last visited Oct. 21, 2010).

³⁸ The origins of this auxiliary station inquiry stem from a Petition for Declaratory Ruling filed by WSI in 2007. See WSI Petition. In its Petition, WSI sought a ruling that a licensee may use antennas having distributed elements to operate links, in addition to the main link, subject to conditions that: (1) all radiating elements together conform to the applicable antenna radiation pattern in Section 101.115; and (2) all links are successfully coordinated. See *id.* at 1. WSI’s Petition was placed on Public Notice later in 2007. See *Wireless Telecommunications Bureau Seeks Comment on Request for Declaratory Ruling by Wireless Strategies, Inc. Regarding Coordination of Microwave Links under Part 101 of the Commission’s Rules*, Public Notice, DA 07-2684, WT Dkt. No. 07-121 (June 19, 2007). Not surprisingly, this caused numerous concerns—both legal and policy—to be raised by various affected parties. See, e.g., Opposition of Alcatel-Lucent, WT Dkt. No. 07-121, at 4 (filed July 19, 2007); Comments of Comsearch, WT Dkt. No. 07-121, at 1-9 (filed July 19, 2007); Comments of David B. Popkin, WT Dkt. No. 07-121, at 2-4 (filed July 19, 2007); Comments of Harris-Stratex, Inc., WT Dkt. No. 07-212, at 5

As an initial matter, WSI's proposal remains in its infancy. WSI first promoted its "smart antenna" concept in a series of several rudimentary drawings in 2007. Although three years have passed, to AT&T's knowledge, specifications for WSI's equipment—which WSI asserted was so advanced as to warrant the rule modifications it proposed at that time—still have not been made public, nor has any independent testing of that equipment been made available.³⁹ Until WSI's proposals are thoroughly tested in a neutral environment by a technically competent group of experts, it would be premature to even consider permitting "auxiliary" stations.

WSI's recent public interest claims similarly require extremely close examination given WSI's penchant for hyperbole.⁴⁰ In particular, the Commission must carefully scrutinize the

(filed July 19, 2007); Comments of the National Spectrum Managers Association, WT Dkt. No. 07-121, at 3, 8 (filed July 19, 2007); Comments of Mobile Satellite Ventures Subsidiary LLC and Terrestrial Networks, Inc., WT Dkt. No. 07-121, at 2 (filed July 19, 2007); Comments of Verizon, WT Dkt. No. 07-121, at 2-6 (filed July 19, 2007). AT&T believes these concerns are equally applicable to the auxiliary station proposal.

³⁹ As EIBASS detailed in the WSI proceeding: "One would think that if WSI really had developed a cost-effective, phased array, physically small microwave antenna that it would be only too happy to let an independent laboratory measure the antenna's performance and write a report, for peer review by any interested party. WSI could then sell its new-technology antenna to parties wanting to build broadband network microwave backhauls in frequency congested areas using its innovative technology antenna; that is, WSI wouldn't need any relaxed new rules if its DRE antenna can already meet microwave Category A antenna requirements, as it claims." *Ex parte* presentation of EIBASS, WT Dkt. No. 07-121, at 4 n.2 (Apr. 8, 2010). But—to AT&T's knowledge—WSI did not publish any independent testing, and the Commission needs to ask itself why.

⁴⁰ From the outset, WSI has tried to get away with making outlandish claims about its technology while steadfastly refusing to provide adequate support. In response to a 2007 request from FWCC for additional technical information, WSI tried to parry by stating that a "company is not required under the rules to explain how an innovative antenna works. Any type of directional antenna that is in compliance with the rules is permitted." Reply Comments to the Fixed Wireless Communications Coalition's Letter of March 26, 2007, WT Dkt. No. 07-121, at 3 (Apr. 26, 2007). The Commission already recognized WSI's disposition for inaccuracy in the NPRM, where it firmly rejected WSI's repeated claims that its proposal was consistent with *existing rules*. The Commission explained that WSI plainly ignored the literal terms of the FCC's rules: "WSI's proposal to consider the performance of a system on an aggregate basis is not consistent with the plain wording of our rules for two reasons." NPRM, ¶ 49.

claims WSI made in an *ex parte* filed in advance of this NPRM. In its *ex parte*, WSI explains that its technology will “[m]ake it possible for licensees to increase the effective use of spectrum on ALL licensed microwave stations by at least 100% and on new licensed stations by over 1000%.”⁴¹ WSI also claims that a “typical 4G deployment has 100 base stations within an area of a six mile radius. By using the sidelobe radiation around a Fixed Services licensed station the 100 base stations can be backhauled with just one frequency, conserving approx. 5800 MHz of spectrum compared to legacy paths and at a cost 80% less than a legacy deployment.”⁴² As would be expected, WSI fails to support these tantalizing claims. Given the increasing constraints on spectrum for wireless backhaul, the Commission must regulate based on facts, not hollow promises.⁴³ Accordingly, the Commission should not modify its rules at this time.

Even if the Commission ultimately determines that this proposal might satisfy the public interest—which it does not—the Commission should not permit “auxiliary” stations in the 6 GHz and 11 GHz bands, as requested by WSI. As detailed above, this spectrum is already heavily used and use of these bands is expected to support significant 4G mobile broadband deployment.⁴⁴ Instead, the Commission could consider permitting “auxiliary” stations in

⁴¹ See Letter from Michael Mulcay, Chairman, Wireless Strategies, Inc., to Marlene H. Dortch, Secretary, FCC, WTB Dkt. No. 07-121, Presentation at 18 (filed July 30, 2010).

⁴² See *id.*, Presentation at 19.

⁴³ Accordingly, AT&T supports the Commission’s decision to “seek more specific information on the types of operations for which auxiliary stations could be used. Information that would be useful would include: (1) an estimate of how many systems parties contemplate operating with auxiliary stations, (2) information on whether such systems would typically be deployed in urban or rural areas, (3) the types of uses to which such systems would be put, (4) the contemplated distances between the auxiliary stations and the main link, and (5) the relative amount of traffic anticipated to be carried on the main link versus the auxiliary links.” NPRM, ¶ 54.

⁴⁴ The Commission aptly notes that “the examples WSI provides propose use of the Lower 6 GHz Band (5925 MHz – 6425 MHz). Recently, we noted that that band has become highly

spectrum already contemplated for point-to-multipoint operation, such as the Local Multipoint Distribution Service, the 24 GHz Service, or the 38.6-40.0 GHz band. As the Commission explains, “[t]hose bands feature geographic area licensing that would appear to be well suited for the type of operations involving multiple stations, whether ‘auxiliary’ or primary.”⁴⁵

VIII. CONCLUSION

As detailed above, AT&T commends the Commission’s decision to address wireless backhaul issues in a comprehensive manner. Wireless backhaul will only become more important as mobile broadband use continues to skyrocket. While some of the NPRM’s proposals will prove very valuable—including the Commission’s recognition of the need for additional FS spectrum and the use of adaptive modulation—several other proposals raise serious efficiency concerns and should be studied further before implementation.

Respectfully submitted,

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congested and that there are areas where it is impossible to coordinate 30 megahertz bandwidth links.” *Id.* ¶ 56 (internal footnote omitted).

⁴⁵ *Id.* ¶ 55.